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Deduction of the self-energy and bosonic spectrum of Bi2212 from ARPES experiments JIN MO BOK, HAN-YONG CHOI, Sungkyunkwan University, JUNFENG HE, X.J. ZHOU, Chinese Academy of Sciences, CHANDRA M. VARMA, University of California, Riverside — We analyzed the ARPES intensity of slightly underdoped (T_c=89K)and overdoped (T_c=82K) Bi2212 superconductors. The diagonal and off-diagonal self-energy, Σ and ϕ, were extracted by performing MDC (momentum distribution curve) fitting using superconducting Green's function at the tilt angle θ with respect to the nodal direction. Using the extracted self-energy as input, the Eliashberg function $\alpha^2F^{(+)}$ and $\alpha^2F^{(-)}$ corresponding to Σ and ϕ were deduced by inverting the d-wave Eliashberg equation. Our main results are follows: (1) The deduced Eliashberg functions are similar for slightly underdoped and overdoped Bi2212. (2) The Eliashberg function $\alpha^2F^{(+)}$ has two peaks at 15meV and 50meV. Both peaks were enhanced as the tilt angle increases or temperature decreases. The Eliashberg function $\alpha^2F^{(-)}$ has one peak at 15meV. Its energy scale is almost the same as the energy scale of the low energy peak of $\alpha^2F^{(+)}$. Then, we will compare our results with other experiments and modal calculations.

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